

<u>DB Name</u>	<u>Query</u>	<u>Hit Count</u>	<u>Set Name</u>
USPT,JPAB,EPAB,DWPI,TDBD	11 and 12 and 110	977	L18
USPT,JPAB,EPAB,DWPI,TDBD	11 and 12 and 18 and 112	1	L17
USPT,JPAB,EPAB,DWPI,TDBD	11 and 12 and 18 and 110 and 112	0	L16
USPT,JPAB,EPAB,DWPI,TDBD	11 and 12 and salt and 16 and 18 and 110 and 112	0	L15
USPT,JPAB,EPAB,DWPI,TDBD	13 and 112	32	L14
USPT,JPAB,EPAB,DWPI,TDBD	111 and 112	0	L13
USPT,JPAB,EPAB,DWPI,TDBD	mixer granulation	46	L12
USPT,JPAB,EPAB,DWPI,TDBD	19 and 110	308	L11
USPT,JPAB,EPAB,DWPI,TDBD	(flour or starch)	188162	L10
USPT,JPAB,EPAB,DWPI,TDBD	17 and 18	531	L9
USPT,JPAB,EPAB,DWPI,TDBD	(clay or bentonite)	153410	L8
USPT,JPAB,EPAB,DWPI,TDBD	15 and 16	881	L7
USPT,JPAB,EPAB,DWPI,TDBD	(zeolite or talc or silicate)	272056	L6
USPT,JPAB,EPAB,DWPI,TDBD	salt and 14	1528	L5
USPT,JPAB,EPAB,DWPI,TDBD	11 and 12 and 13	2061	L4
USPT,JPAB,EPAB,DWPI,TDBD	(size or length or diameter)	4102290	L3
USPT,JPAB,EPAB,DWPI,TDBD	(particulate or particle)	1056048	L2
USPT,JPAB,EPAB,DWPI,TDBD	enzyme same granul\$	5195	L1

WEST**End of Result Set**

Generate Collection

L17: Entry 1 of 1

File: USPT

Jan 12, 1993

DOCUMENT-IDENTIFIER: US 5178798 A

TITLE: Formation of detergent granules by deagglomeration of detergent dough

ABPL:

The present invention provides a process for making detergent granules by forming a doughy mass comprising surfactant and/or water-soluble organic polymer and/or detergent builder, and then granulating by mixing a deagglomerating agent into the doughy mass at a high shear rate. Neutral or alkaline salt, detergent builder and other conventional detergent ingredients can be, and preferably are, kneaded into the doughy mass before addition of the deagglomerating agent. The deagglomerating agent is a fine powder having a mean particle size of less than about 200 microns and is most preferably sodium aluminosilicate.

BSPR:

The present invention relates to a process for preparing detergent granules, and to detergent granules made by this process. More particularly, this invention relates to a process for making detergent granules by forming a doughy mass comprising water and surfactant and/or water-soluble organic polymer and/or detergent builder, and then granulating by mixing the doughy mass with a deagglomerating agent at a high shear rate. Neutral or alkaline salt, detergent builder and other conventional detergent ingredients can be, and preferably are, kneaded into the doughy mass before addition of the deagglomerating agent. The deagglomerating agent is a fine powder having a mean particle size of less than about 200 microns and is most preferably sodium aluminosilicate.

BSPR:

The traditional method for producing detergent granules is spray drying. Typically, detergent ingredients such as surfactant, builder, silicates and carbonates are mixed in a mix tank to form a slurry which is about 35% to 50% water. This slurry is then atomized in a spray drying tower to reduce moisture to below about 10%. It is possible to compact spray dried particles to make dense detergent granules. See U.S. Pat. No. 4,715,979, Moore et al., issued Dec. 29, 1987. However, the use of spray drying to make condensed granules has some disadvantages. Spray drying is energy intensive and the resulting granules are typically not dense enough to be useful in a concentrated detergent product. Spray drying methods generally involve a limited amount (less than 40%) of organic components such as surfactant for environmental and safety reasons.

BSPR:

The preferred temperature range of the doughy mass is between about 40.degree. and 80.degree. C., and the most preferred range is between about 50.degree. C. and 70.degree. C. Temperatures that are too cold (less than about 35.degree. C.) result in a doughy mass which is too viscous to be effectively broken up by the shearing of the mixer and the deagglomerating agent. Granulation of a cold doughy mass must be done using grinding equipment as has been described elsewhere. Also, cold temperature reduces the stickiness of the doughy mass, which prevents the deagglomerating agent from sticking to the outside of the forming particles during step (b). In the present process, it is believed that the deagglomerating agent coats the forming particles and suppresses reagglomeration of these particles, resulting in free-flowing, nonsticky particles.

BSPR:

Kneading is ordinarily carried out in a mixer, most conveniently in the high shear mixer necessary for the second step in the process. Examples of appropriate mixers are the Cuisinart.RTM. mixer, Lancaster.RTM. mixer and Eirich.RTM.

Intensive Mixer. However, if desired, the doughy mass could be kneaded in a Sigma.RTM. mixer or extruder, for example, and then transferred to a high shear mixer such as the Eirich.RTM. Intensive Mixer for granulation (step (b) of the process). The speed of the mixer and duration of the kneading step varies depending on the kin of mixer and ingredients used. Kneading should be done at a speed and for a time sufficient to achieve a homogeneous doughy mass.

BSPR:

Water-soluble silicate solids represented by the formula $\text{SiO}_2 \cdot \text{M}_2\text{O}$, M being an alkali metal, and having a $\text{SiO}_2 : \text{M}_2\text{O}$ weight ratio of from about 0.5 to about 4.0, are useful salts in the compositions of the invention at levels of from about 2% to about 15% on an anhydrous weight basis, preferably from about 3% to about 8%. Anhydrous or hydrated particulate silicate can be utilized.

BSPR:

These detergent ingredients can also include suds boosters or suds suppressors, anti-tarnish and anticorrosion agents, soil suspending agents, soil release agents, germicides, pH adjusting agents, non-builder alkalinity sources, chelating agents, smectite clays, enzyme-stabilizing agents and perfumes. See U.S. Pat. No. 3,936,537, issued Feb. 3, 1976 to Baskerville, Jr. et al., incorporated herein by reference. Bleaching agents and activators are described in U.S. Pat. No. 4,412,934, Chung et al., issued Nov. 1, 1983, and in U.S. Pat. No. 4,483,781, Harment, issued Nov. 20, 1984, both of which are incorporated herein by reference.

BSPR:

Preferred additional detergent ingredients are germicide, soil release agent, soil suspending agent, and pH adjusting agent. Other additional detergent ingredients, such as bleaching agent, enzyme, and suds control agent, can be admixed with the finished detergent granules. Fluorescent brighteners, which are known in the art, can, and preferably are, also included in the doughy mass.

BSPR:

The second step of the instant process is mixing the doughy mass formed by step (a) in a ratio of from about 9:1 to about 1:5, preferably from about 4:1 to about 1:2, most preferably from about 3:1 to about 1:1, of a deagglomerating agent which is a fine powder having a mean particle size of less than about 200 microns, preferably less than about 100 microns, more preferably less than about 50 microns, most preferably less than about 10 microns. This is done in a high shear mixer at a tip speed of greater than about 10 meters per second until detergent granules are formed.

BSPR:

Granulation occurs almost immediately after addition of the deagglomerating agent to the doughy mass under high shear. Without meaning to be bound by theory, it is believed that the doughy mass is granulated in the high shear mixer because of the shearing action of the mixer and the deagglomerating and coating properties of the deagglomerating agent. The resulting detergent granules are dense and free-flowing. The particle size distribution of the resulting detergent granules is ordinarily from about 100 to about 1200 microns, with the mean particle size being about 400 microns. The particles can be and preferably are screened to remove particles of greater than about 1200 microns in diameter. Bulk densities for particles made by this process range from about 500 to about 1200 grams per liter and are typically between about 650 and about 850 grams per liter, depending upon the composition. Note that the "mean particle size" refers to individual particles and not particle agglomerates.

BSPU:

(b) mixing the doughy mass with an effective amount of a deagglomerating agent, which is a fine powder having a mean particle size of less than about 200 microns, in a high shear mixer at a tip speed of greater than about 10 meters per second and wherein the ratio of doughy mass to deagglomerating agent added in step (b) is from about 9:1 to about 1:5.

BSPV:

(3) from 0 to about 25% of a deagglomerating agent which is a fine powder having a mean particle size less than about 200 microns;

DEPR:

A. NaC.sub.12 LAS is first formed from the dry neutralization of the dodecylsulfonic acid with light (fine particle size) soda ash (carbonate). The Eirich mixer is charged with the fine grade, light soda ash. Dodecylsulfonic acid (@140.degree. F.; 60.degree. C.) is then added to the fine soda ash. The resulting mass is then mixed for 35 seconds to allow the dry neutralization to begin and initiate the formation of a doughy mass.

DEPR:

E. The doughy mass formed in steps A-D (which has about 12% water) is then granulated using sodium aluminosilicate (SAS) powder. Hydrated zeolite A is the SAS used. It has an average particle diameter of from 32 to 5 microns. The SAS is added to the doughy mass over a period of 45 seconds. The tip speed for the rotor of the Eirich mixer is 33 m/sec during the addition of the deagglomerating agent (SAS). The mass is then post-mixed for approximately 3 minutes to allow the dough granulation to complete.

DEPR:

The resulting detergent granules are screened to select a through 14 Tyler mesh (about 1180 microns) on 100 Tyler mesh (150 microns) particle size cut. The through 14 on 100 Tyler mesh particle size cut has a bulk density of 700 g/L.

DEPR:

The Cuisinart.RTM. is charged with 54% of the required sodium aluminosilicate (20% water hydrate). Sodium alkyl sulfate is then added as a low moisture surfactant paste (71% C.sub.14-15 AS, 20% water) at 140.degree. F. (60.degree. C.), during mixing. The AS paste serves as the doughy mass in this example and is not kneaded. The AS paste is added until the mixing mass appears meally and dough-like. Then additional aluminosilicate is added to further deagglomerate the mass. Further AS paste followed by aluminosilicate addition is repeated until the Cuisinart.RTM. is about 3/4 full of material. The resulting particles are screened to obtain a through 14 Tyler mesh (about 1180 microns) on 65 Tyler mesh (about 208 microns) particle size distribution. The resulting granular detergent product has a bulk density of 770 g/L and excellent flow properties (no stickiness).

DEPR:

The Eirich.RTM. Intensive Mixer is charged with low moisture sodium (C.sub.14-15 alkyl sulfate (73% C.sub.14-15 AS, 11% water, 10% PED-8000) and sheared for 30 seconds. (This low moisture alkyl sulfate serves as the detergent dough mass described in Example II.) Sodium aluminosilicate (as zeolite) is then added to the low moisture alkyl sulfate during mixing at a rotor tip speed of 26.2 m/sec. The shearing action of the mixer, combined with the deagglomerating properties of the aluminosilicate results in the formation of granular detergent particles. The particles are then screened to obtain a similar particle size distribution as Example II. The resulting detergent granules have a bulk density of 661 g/L.

DEPR:

The following detergent composition is prepared according to Examples II and III. This composition makes admixable non-phosphate detergent builder particles.

CLPR:

17. A process for making detergent granules according to claim 16 wherein said deagglomerating agent is a fine powder with a mean particle size of less than about 100 microns.

CLPR:

22. A process for making detergent granules according to claim 1, said detergent granules comprising from 0 to about 50%, by weight of the finished product, of additional detergent ingredients selected from the group consisting of water-soluble neutral or alkaline salt, suds control agent, soil suspending agent, soil release agent, germicide, pH adjusting agent, chelating agent, smectite clay, enzyme-stabilizing agent, perfume, and fluorescent brightener.

CLPV:

(b) mixing the doughy mass with an effective amount of a deagglomerating agent, which is a fine powder having a mean particle size of less than about 200 microns, in a high shear mixer at a tip speed of greater than about 10 meters per second; wherein the ratio of doughy mass to deagglomerating agent added in step

(b) is from about 9:1 to about 1:5; wherein said mixing is at a temperature between about 35.degree. and 100.degree. C.; and wherein steps (a) and (b) do not include crushing.

CLPW:

(3) from 0 to about 25% of a deagglomerating agent which is a fine powder having a mean particle size less than about 200 microns;

WEST

Generate Collection

Search Results - Record(s) 1 through 10 of 10 returned.☐ 1. Document ID: US 6248706 B1

L22: Entry 1 of 10

File: USPT

Jun 19, 2001

US-PAT-NO: 6248706

DOCUMENT-IDENTIFIER: US 6248706 B1

TITLE: Enzyme granulate for washing and cleaning

DATE-ISSUED: June 19, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Herrmann; Hubert A.	Cremlingen-Weddel			DEX
Spannagl; Rolf	Husum			DEX

US-CL-CURRENT: 510/320; 435/187, 435/188, 510/438, 510/462, 510/475, 510/530

Full	Title	Citation	Front	Review	Classification	Date	Reference	Claims	KWC	Draw Desc	Image
------	-------	----------	-------	--------	----------------	------	-----------	--------	-----	-----------	-------

☐ 2. Document ID: US 6136772 A

L22: Entry 2 of 10

File: USPT

Oct 24, 2000

US-PAT-NO: 6136772

DOCUMENT-IDENTIFIER: US 6136772 A

TITLE: Enzyme-containing granules and process for the production thereof

DATE-ISSUED: October 24, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
De Lima; Joao F.	Birkerod			DKX
Bordin; Eder Manzini	Curitiba			BRX
Markussen; Erik Kjaer	Vaerlose			DKX
Levring; Kirsten Boegh	Virum			DKX
Bonde; Michael	Lyngby			DKX
Marcussen; Erik	Ballerup			DKX
Saugmann; Grethe	Lyngby			DKX

US-CL-CURRENT: 510/392; 435/187, 510/438, 510/442, 510/446, 510/530

Full	Title	Citation	Front	Review	Classification	Date	Reference	Claims	KWC	Draw Desc	Image
------	-------	----------	-------	--------	----------------	------	-----------	--------	-----	-----------	-------

#'s : 1, 4, 5, 8

☐ 3. Document ID: US 5955418 A

L22: Entry 3 of 10

File: USPT

Sep 21, 1999

US-PAT-NO: 5955418

DOCUMENT-IDENTIFIER: US 5955418 A

TITLE: Secondary alkyl sulfate surfactant with improved solubility by kneading/extruding process

DATE-ISSUED: September 21, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kazuta; Takashi	Kobe			JPX
Ebihara; Fukuji	Kobe			JPX
Ogami; Kinji	Moriguchi			JPX

US-CL-CURRENT: 510/451, 264/118, 264/142, 510/351, 510/357, 510/441, 510/495, 510/497, 510/507, 510/509, 510/511

Full	Title	Citation	Front	Review	Classification	Date	Reference	Claims	KWIC	Draw Desc	Image
------	-------	----------	-------	--------	----------------	------	-----------	--------	------	-----------	-------

☐ 4. Document ID: US 5858952 A

L22: Entry 4 of 10

File: USPT

Jan 12, 1999

US-PAT-NO: 5858952

DOCUMENT-IDENTIFIER: US 5858952 A

TITLE: Enzyme-containing granulated product method of preparation and compositions containing the granulated product

DATE-ISSUED: January 12, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Izawa; Yoshifumi	Kashima-gun			JPX
Watanabe; Takaaki	Kashima-gun			JPX
Kotani; Nobuharu	Kashima-gun			JPX

US-CL-CURRENT: 510/392, 510/305, 510/306, 510/320, 510/349, 510/441, 510/530

Full	Title	Citation	Front	Review	Classification	Date	Reference	Claims	KWIC	Draw Desc	Image
------	-------	----------	-------	--------	----------------	------	-----------	--------	------	-----------	-------

☐ 5. Document ID: US 5733763 A

L22: Entry 5 of 10

File: USPT

Mar 31, 1998

US-PAT-NO: 5733763

DOCUMENT-IDENTIFIER: US 5733763 A

TITLE: Enzyme granulate formed of an enzyme-containing core and an enzyme-containing shell

DATE-ISSUED: March 31, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP	CODE	COUNTRY
Markussen; Erik Kj.ae butted.r	V.ae	butted.rl.o	slashed.se		DKX
Falholt; Per	Gentofte				DKX

US-CL-CURRENT: 435/175; 435/176, 435/177, 435/182, 510/392, 510/530

Full	Title	Citation	Front	Review	Classification	Date	Reference	Claims	KWC	Draw	Desc	Image
------	-------	----------	-------	--------	----------------	------	-----------	--------	-----	------	------	-------

☐ 6. Document ID: US 5698510 A

L22: Entry 6 of 10

File: USPT

Dec 16, 1997

US-PAT-NO: 5698510

DOCUMENT-IDENTIFIER: US 5698510 A

TITLE: Process for making granular detergent compositions comprising nonionic surfactant

DATE-ISSUED: December 16, 1997

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP	CODE	COUNTRY
Wilkinson; Carole Patricia	Lxelles				BEX
France; Paul Amaat Raymond	Kessel-Lo				BEX
Schmitt; John Christian	Euskirchen Kirchheim				DEX

US-CL-CURRENT: 510/444; 510/350, 510/351, 510/356, 510/451, 510/502

Full	Title	Citation	Front	Review	Classification	Date	Reference	Claims	KWC	Draw	Desc	Image
------	-------	----------	-------	--------	----------------	------	-----------	--------	-----	------	------	-------

☐ 7. Document ID: US 5691294 A

L22: Entry 7 of 10

File: USPT

Nov 25, 1997

US-PAT-NO: 5691294
DOCUMENT-IDENTIFIER: US 5691294 A

TITLE: Flow aids for detergent powders comprising sodium aluminosilicate and hydrophobic silica

DATE-ISSUED: November 25, 1997

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
France; Paul Amaat Raymond Gerard	Kessel-Lo			BEX
Van Dijk; Paul Irma Albertus	Putte			BEX

US-CL-CURRENT: 510/349; 510/350, 510/356, 510/441, 510/442, 510/443, 510/444,
510/501, 510/506, 510/507, 510/511

Full	Title	Citation	Front	Review	Classification	Date	Reference	Claims	KWIC	Draw Desc	Image
------	-------	----------	-------	--------	----------------	------	-----------	--------	------	-----------	-------

☐ 8. Document ID: US 5407594 A

L22: Entry 8 of 10

File: USPT

Apr 18, 1995

US-PAT-NO: 5407594
DOCUMENT-IDENTIFIER: US 5407594 A

TITLE: Detergent tablets having specific particle size distribution

DATE-ISSUED: April 18, 1995

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Fry; Alan J.	Merseyside			GBX
Garvey; Michael J.	Merseyside			GBX
Iley; William J.	Merseyside			GBX
Newbold; Geoffrey	Merseyside			GBX
Wraige; Douglas	Chester			GBX

US-CL-CURRENT: 510/439; 252/176, 510/298, 510/323, 510/351, 510/361, 510/446,
510/507

Full	Title	Citation	Front	Review	Classification	Date	Reference	Claims	KWIC	Draw Desc	Image
------	-------	----------	-------	--------	----------------	------	-----------	--------	------	-----------	-------

☐ 9. Document ID: US 5360567 A

L22: Entry 9 of 10

File: USPT

Nov 1, 1994

US-PAT-NO: 5360567
DOCUMENT-IDENTIFIER: US 5360567 A

TITLE: Detergent compositions

DATE-ISSUED: November 1, 1994

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Fry; Alan J.	South Wirral			GB2
Garvey; Michael J.	Wirral			GB2
Wraige; Douglas	Chester			GB2

US-CL-CURRENT: 510/298; 252/176, 510/323, 510/438, 510/446, 510/506

Full	Title	Citation	Front	Review	Classification	Date	Reference	Claims	KWC	Draw Desc	Image
------	-------	----------	-------	--------	----------------	------	-----------	--------	-----	-----------	-------

☐ 10. Document ID: US 5132036 A

L22: Entry 10 of 10

File: USPT

Jul 21, 1992

US-PAT-NO: 5132036
DOCUMENT-IDENTIFIER: US 5132036 A

TITLE: Laundry treatment product

DATE-ISSUED: July 21, 1992

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Falou; Mohamad S.	Cheadle			GB2
Finch; Timothy D.	Wirral			GB2
Garner-Gray; Peter F.	Preston			GB2
Hight; Andrew T.	Spital			GB2
Murphy; Martin J.	Bromborough			GB2
Newbold; Geoffrey	Bebington			GB2
Niven; Ian E.	Liverpool			GB2
Savill; Derek G.	Ashton			GB2

US-CL-CURRENT: 510/277; 252/186.25, 252/186.27, 510/297, 510/305, 510/312,
510/490, 510/494, 510/504, 510/513, 8/137

Full	Title	Citation	Front	Review	Classification	Date	Reference	Claims	KWC	Draw Desc	Image
------	-------	----------	-------	--------	----------------	------	-----------	--------	-----	-----------	-------

Generate Collection

Term	Documents
SALT.DWPI,TDBD,EPAB,JPAB,USPT.	718074
SALTS.DWPI,TDBD,EPAB,JPAB,USPT.	496150
(21 AND 1 AND 8 AND 10 AND 6 AND SALT AND 2).USPT,JPAB,EPAB,DWPI,TDBD.	10

Documents, starting with Document:

Display Format: